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Health Consultation

Ground Water Plume Delineation and Health Evaluation

PRECISION NATIONAL CORPORATION
(a/k/a PRECISION NATIONAL PLATING SERVICES, INCORPORATED)

CLARKS-SUMMIT, LACKAWANNA COUNTY, PENNSYLVANIA

CERCLIS NO. PAD053676631

SEPTEMBER 30, 1999

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

Health Consultation: A Note of Explanation

An ATSDR health consultation is a verbal or written response from ATSDR to a specific request for information about health risks related to a specific site, a chemical release, or the presence of hazardous material. In order to prevent or mitigate exposures, a consultation may lead to specific actions, such as restricting use of or replacing water supplies; intensifying environmental sampling; restricting site access; or removing the contaminated material.

In addition, consultations may recommend additional public health actions, such as conducting health surveillance activities to evaluate exposure or trends in adverse health outcomes; conducting biological indicators of exposure studies to assess exposure; and providing health education for health care providers and community members. This concludes the health consultation process for this site, unless additional information is obtained by ATSDR which, in the Agency's opinion, indicates a need to revise or append the conclusions previously issued.

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Prepared by:

Pennsylvania Department of Health
Under Cooperative Agreement with the
Agency for Toxic Substances and Disease Registry

SUMMARY

This document responds to a request by the Environmental Protection Agency (EPA) that the Pennsylvania Department of Health (PADOH) and Agency for Toxic Substances and Disease Registry (ATSDR) determine if residents near the Precision National Plating Services (PNPS) site are currently being exposed to hexavalent chromium in their private well water at levels that would harm their health and assist in defining the extent of a groundwater plume contaminated with hexavalent chromium that originated at the PNPS site.

With the exception of one household, all families living on land above the contaminated groundwater plume are currently using municipal water and are not exposed to site-related hexavalent chromium in their private well water. The household that continues to use well water has a new residential well (RW-2) that is sufficiently cased to allow access to deep uncontaminated groundwater and does not appear to be impacted by the site.

The PADOH and ATSDR estimate in this Health Consultation (HC) the extent of the contaminated groundwater plume, and conclude that the site represents no apparent public health hazard for the residents of the household near the site who continue to use private well water.

BACKGROUND AND STATEMENT OF ISSUES

On October 29, 1997, EPA Region III requested ATSDR to recommend residential sampling locations and determine if residents near the PNPS site are currently exposed to hexavalent chromium in their private well water at levels that pose a public health threat. EPA also requested ATSDR to recommend locations for the placement of monitoring wells necessary to determine the extent of a groundwater plume containing hexavalent chromium that is believed to have originated at the PNPS site [1].

On October 15, 1998, in Cooperative Agreement with ATSDR, PADOH prepared Health Consultation #1 to address EPA's initial request and committed to evaluate the monitoring well sampling results and determine the extent of the contaminated groundwater plume and its impact on nearby residents. The monitoring wells were installed during October and November of 1998 at locations recommended by PADOH, PADEP, and EPA, and subsequently sampled in April and May 1999.

This Health Consultation (#5) is one of a series that addresses environmental contamination near the site and determines its public health significance. Specifically, HC #5 addresses the issue of plume delineation and current nearby residential exposure to hexavalent chromium in private well water and its impact on public health.

PNPS owns and operates a chromium plating facility at 198 Ackerly Road, approximately 0.75 miles north of Clarks Summit, Pennsylvania (Figures 1-3). The 46-acre property is in a rural area

and has operated as a plating facility since 1956. The previous owner operated the facility from its inception in 1956 until 1971 for plating and machining locomotive crankshafts. PNPS acquired ownership of the site in 1971. PNPS limited operations at the facility to locomotive crankshafts until 1975 when the company added a cylinder-lining division. An addition to the plant was constructed in 1975 to accommodate the plating of cylinder linings. Historical (PADEP Bureau of Water Quality) data indicates that hexavalent chromium has migrated off the site in groundwater and has contaminated nearby residential wells [1].

The site is in a mountainous region of northeastern Pennsylvania at an elevation of approximately 1,190 feet above mean sea level (amsl). A topographic high of 1,240 feet amsl is approximately 400 feet south of the facility. Based on topographic data, the direction of surface drainage at the site is to the north-northwest (downhill) at a gradient of approximately 660 feet per mile. The surrounding area is drained by Ackerly Creek which flows from northeast to southwest just below the site, then makes a 90 degree turn to the northwest toward Glenburn Pond [1].

DISCUSSION

To determine if residents near the Precision National Plating Services (PNPS) site are currently being exposed to hexavalent chromium in their private well water at levels that would harm their health we evaluated the extent of the groundwater plume, contaminated with hexavalent chromium that originated at the site.

Figures 2 & 3 show the locations of monitoring well clusters (AGM-1-7S,I & AGM-6D), monitoring wells (MW1-4 & MW-A,B,C), the orientations of two prominent high angle (nearly vertical) joint sets, and other topographic and cultural features near the site. The well locations were slightly adjusted from those proposed in HC #1 based upon local topography and access. We believe that the wells have been appropriately placed to define the plume and base our discussion and conclusions on the results of the April 4-8, 1999 sampling conducted by ThermoRetec. A subsequent round of sampling (5/26/99) confirms our findings. ThermoRetec will continue sampling the wells as deemed necessary.

Well clusters 3 and 5, and the contaminated seeps are aligned with the strike (north-75 degrees-west) of one joint set extending from a former encapsulated vault [1]. Well cluster #4 is aligned with the same strike direction extending from an old lagoon which appears as a pond on the United States Geological Survey topographic map of the area [1]. Well 5I is positioned to detect possible underflow beneath Ackerly Creek to discharge points further down the main stream valley. Well clusters 6 and 7 were constructed to detect contamination some distance from the site.

Hexavalent chromium was not detected (less than the detection limit of 10 parts per billion (ppb)) in all of the off-site monitoring wells. Hexavalent chromium was detected in AGM-2S (50 ppb), AGM-3S (400 ppb), AGM-4S (1,100 ppb), AGM-7I (20 ppb/10 ppb duplicate, and less than the detection limit of 10 ppb in the May 1999 sampling). Unless future monitoring would indicate

otherwise, we consider the non-detect value in 7I to be valid because hexavalent chromium was not detected in cluster 6 and contaminated groundwater from the site would have to pass through cluster 6 to reach 7I. Hexavalent chromium was detected in on-site monitoring wells MW-3, MW-4, MW-A, and MW-B at concentrations of 2,200 ppb, 300 ppb, 6,000 ppb and 300 ppb, respectively [3].

Figure 3 illustrates our estimate of the hexavalent chromium groundwater plume. The plume affects only downgradient shallow wells (about 130 feet and shallower) and is generally topographically controlled. It sweeps out an area of a nearly 90 degree arc from Michaelangelo's Restaurant on Old State Road to Ackerly Road north of the site. Because the plume is shallow, Ackerly Creek acts as a groundwater divide and boundary to the northwest. Underflow, if it exists beneath Ackerly Creek, is inconsequential from a public health perspective, because intermediate (and deeper) groundwater flow is uncontaminated. The monitoring well sampling results substantiate our groundwater flow diagram published in HC #2 (Figure 4).

Private residential well-2 (RW-2) is currently being used and is in the area of the contaminated groundwater plume. RW-2 is sufficiently cased to allow access to deep, uncontaminated, groundwater and does not appear to be impacted by the site [2].

CHILD HEALTH INITIATIVE

As part of ATSDR's Child Health Initiative, ATSDR public health consultations indicate whether site-related exposures are of particular concern for children. There is no known current exposure of children or adults to hexavalent chromium in private well water at levels that would harm their health. In the unlikely event that RW-2 would become contaminated with hexavalent chromium from the site in the future, PADOH will take necessary action to protect the public health.

CONCLUSIONS

ATSDR and PADOH conclude that a hexavalent chromium contaminated groundwater plume exists north of the site and is bounded to the north by Ackerly Creek, to the north-east by Ackerly Road and to the west by Old State Road. The contamination affects shallow groundwater. ATSDR and PADOH also conclude that the site currently does not pose a health threat to the resident who continues to use private well water (RW-2) in the area of the contaminated groundwater plume. This well has been sufficiently cased to allow for access to uncontaminated deep groundwater flow. All other residents in the area of the contaminated groundwater plume are believed to be using municipal water and we are unaware of any current exposure to site contaminants through private well water in these homes. Therefore, ATSDR and PADOH have determined that the site represents no apparent public health hazard for people residing in the area of the contaminated groundwater plume through exposure to contaminated private well water.

RECOMMENDATION

Periodically analyze groundwater from RW-2 for hexavalent chromium to assure that it does not become contaminated in the future. Laboratory methodology including method detection and reporting limits should conform to EPA guidelines for drinking water analysis. EPA will implement this recommendation.

REFERENCES

1. Health Consultation #1
   U.S. Agency for Toxic Substances and Disease Registry, Health Consultation #1 for the Precision National Corporation, Clarks-Summit, Lackawanna County, Pennsylvania, CERCLIS NO. PAD053676631. Atlanta: ATSDR, October 15, 1998.

2. Health Consultation #2
   U.S. Agency for Toxic Substances and Disease Registry, Health Consultation #3 (Soil/Sediment Sampling Location Recommendations) for the Precision National Corporation, Clarks-Summit, Lackawanna County, Pennsylvania, CERCLIS NO. PAD053676631. Atlanta: ATSDR, November 11, 1998.

3. Monitoring well sampling data from the Precision National site prepared for ThermoRetec. April and May 1999.

PREPARER OF REPORT

Robert M Stroman, B.S., Pharm.
Health Assessor,
Pennsylvania Department of Health

CERTIFICATION

This Precision National Plating Services Site Health Consultation has been prepared by the Pennsylvania Department of Health under Cooperative Agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.

Roberta Erlwein
Technical Project Officer, SPS, SSAB, DHAC

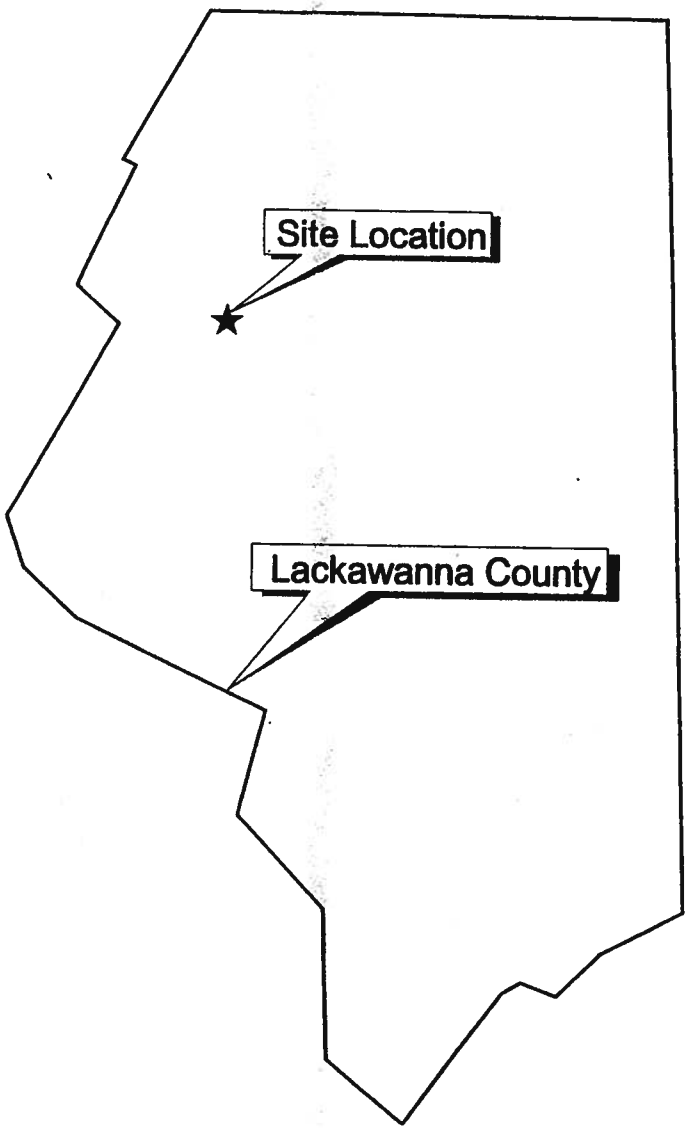
The Division of Health Assessment and Consultation, ATSDR, has reviewed this Health Consultation and concurs with its findings.

Richard E. Gillig
Chief, SPS, SSAB, DHAC, ATSDR

FIGURES

Figure 1

Precision National Site Location Map



Legend

Lackawanna County

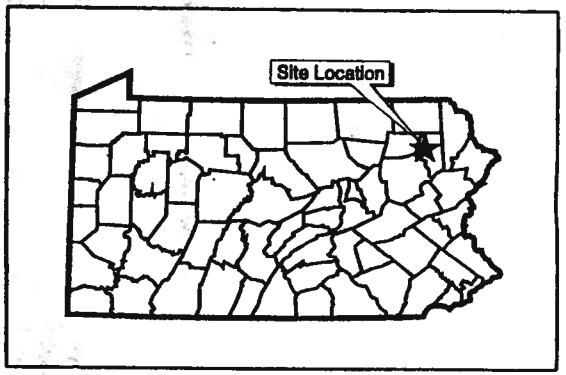


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Figure 2

Precision National
Hexavalent Chromium Groundwater Plume Location

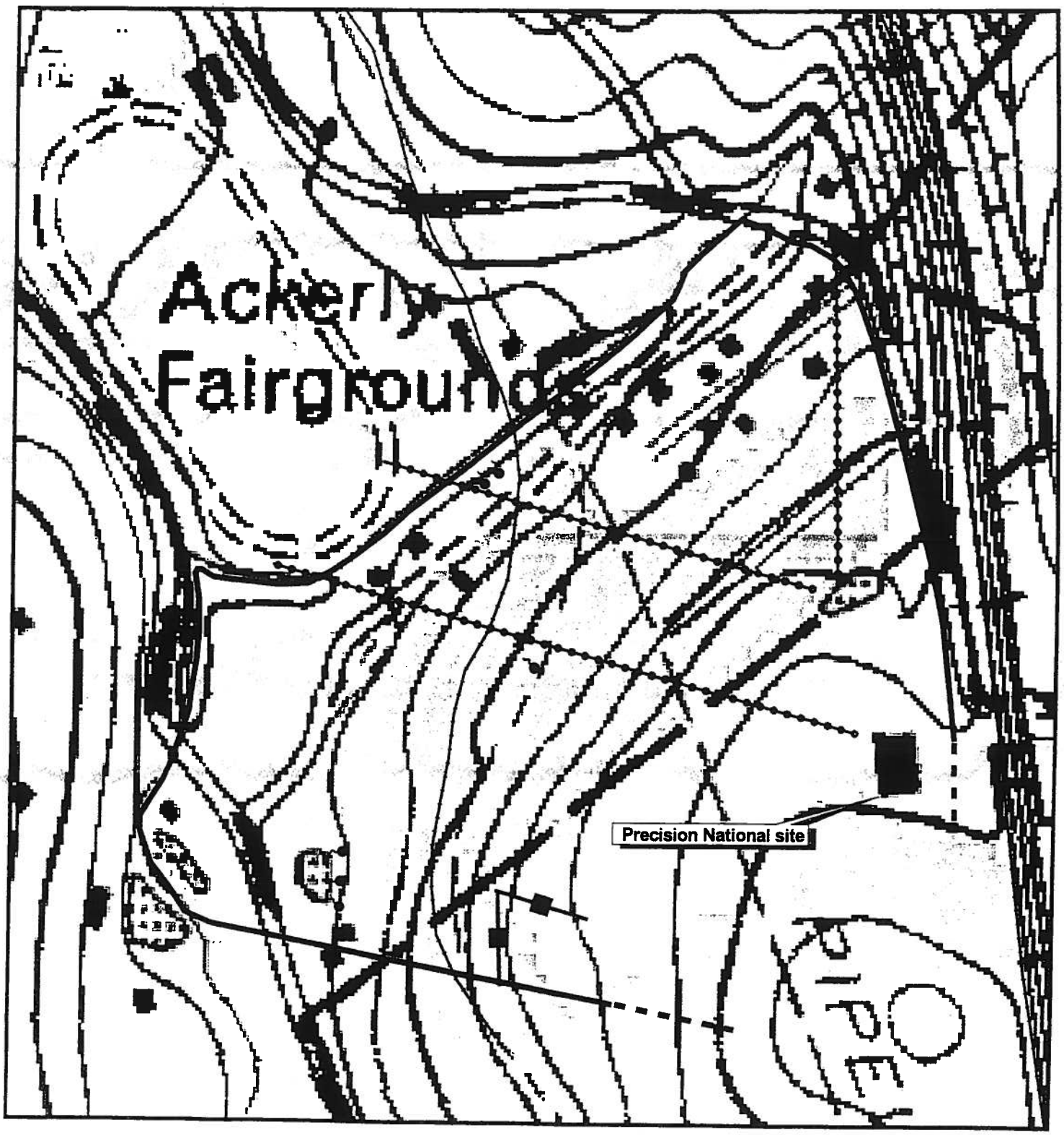

Figure 3

Precision National

Hexavalent Chromium Groundwater Contamination Plume Location

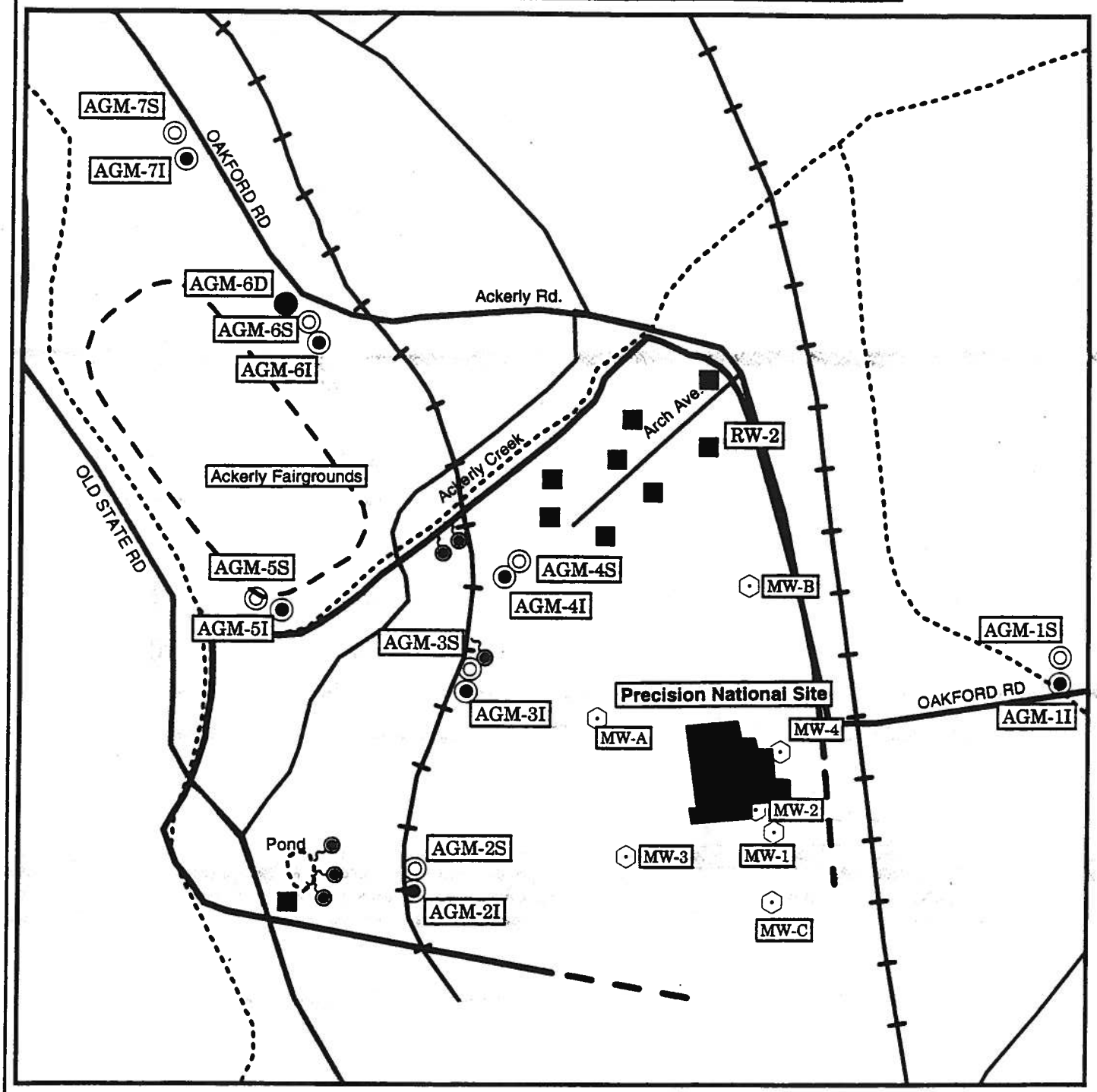

Figure 4

Precision National Groundwater Flow

(Arrows indicate direction of groundwater flow; dashed line shows possible underflow)